

Chapter 3

Toxic Release Inventory:

A MEASURE OF POLLUTION PREVENTION PROGRESS

Reporting to the Toxic Chemical Release Inventory is required by section 313 of the Emergency Planning and Community Right to Know Act, which is also known as Title III of the Superfund Amendment and Reauthorization Act of 1986. The purpose of TRI reporting is to provide the public with information on the releases of over 600 toxic chemicals that may occur in their communities, and to provide the U.S. Environmental Protection Agency with toxic chemical release and waste information that enables the agency to determine the need for future regulations.

EPA maintains all enforcement ability of the TRI program. However facilities are required to provide the state in which they are located with copies of the reports they submit to EPA. The Office of Pollution Prevention and Technical Assistance takes the forms received by the State and manages a TRI database. The data are quality assured and are provided to interested parties.

In 1999, OPPTA developed and implemented a new searchable TRI database on the Internet. The Web site at www.state.in.us/idem/oppta/tri allows anyone with Internet access the ability to search for information on toxic chemical releases in their community. The site will allow searches by county, city, facility and chemical for release and environmental waste data from 1992 through 1997.



www.state.in.us/idem/oppta/tri

Data Quality Assurance and Analysis

The Office of Pollution Prevention and Technical Assistance maintains continual quality assurance efforts for the TRI data submitted to the state. The efforts consists of:

- Validated data entry;
- The creation of a large electronic database;
- Phone calls and letters to facilities that have reported large increases or decreases in quantities reported compared to the previous year, and significant changes in reported production ratios; and
- Meetings with facilities that report greater than 20 million pounds of environmental wastes or greater than 2 million pounds of releases to the environment.

The data are also analyzed to determine which facilities report one year and not the next for a specific chemical or for the entire facility. OPPTA staff members contact those facilities that meet these criteria and inquire into the reason why reporting changed. They also look for facilities that have removed themselves from the reporting requirement by incorporating pollution prevention or for other reasons.

The quality assurance process for the 1996 and 1997 TRI data is complete. The only changes that may occur in the data for these years would result from a

revision submitted by a facility. Unlike previous years, July 31, 1999, was established by the U.S. Environmental Protection Agency as the deadline for receiving revisions from facilities. Reports for the 1998 TRI reporting year were received by OPPTA in July 1999, and the TRI data quality assurance efforts are underway. There are approximately 1,000 facilities in Indiana that report on the TRI, and OPPTA receives and analyzes approximately 3,500 individual report forms each year. The number of chemicals reported each year

ranges from approximately 160 to 180 chemicals. OPPTA uses the TRI data as one way to look at measuring the state's progress in pollution prevention. The case studies provided by the Clean Manufacturing Technology and Safe Materials Institute, reductions demonstrated by recipients of the Governor's Awards for Excellence in Pollution Prevention and reports submitted by facilities participating in the Governor's Toxics Reduction Challenge should all be looked at to provide the best picture of the state in the area of pollution prevention.

Geographical Distribution of Toxic Release Inventory Reported Releases in 1997

The numbers shown in each county represent the number of facilities within that county that reported to the Toxic Release Inventory in 1997 using either the Form R or the Form A. The Form R is a five-page form that is required for facilities that meet the following conditions:

- ! Manufacturing facility (primary Standard Industrial Code in 20-39),
- ! Ten full time employees,
- ! Chemical must be on the TRI list of 650 specific toxic chemicals or chemical categories, and
- ! Either manufacture or process more than 25,000 pounds of the chemical or otherwise use more than 10,000 pounds during the year.

The Form A is a two page form for facilities that meet the above conditions of the Form R, but whose reportable amount of the toxic chemical did not exceed 500 pounds and the chemical was manufactured, processed, or otherwise used in an amount not exceeding 1 million pounds for the reporting year.

A county shaded "white" designates where no releases to the environment were reported in Section 5 of the TRI Form R for the 1997 reporting year. This does not mean that manufacturing does not take place or that no environmental waste is generated or reported in that particular county.

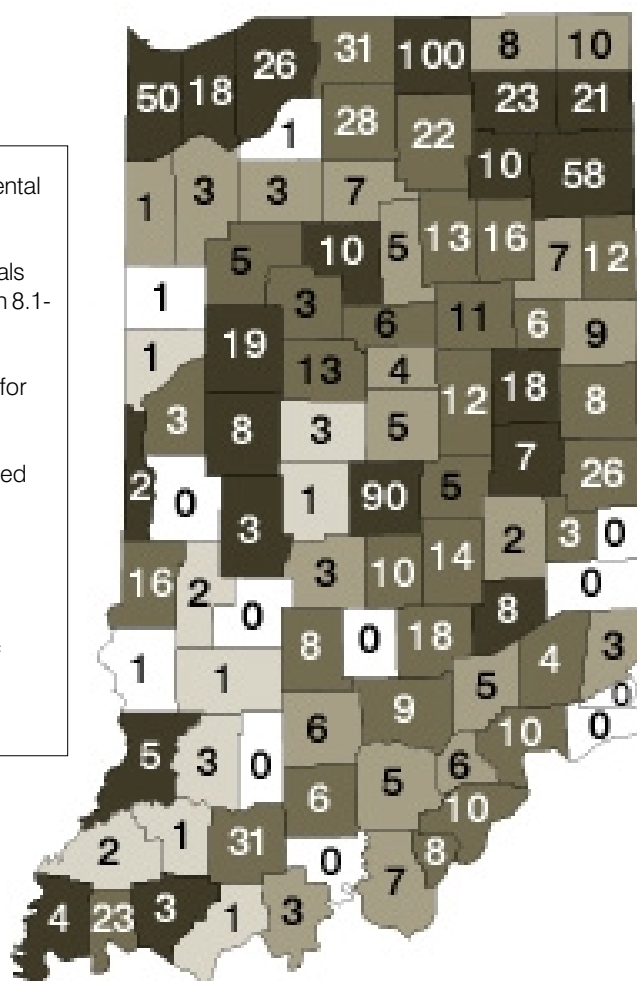


Geographical Distribution of Toxic Release Inventory Reported Environmental Wastes in 1997

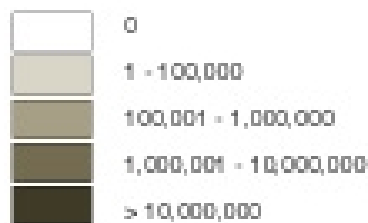
The same reporting criteria as discussed in the previous map applies to this map. The color shading represents ranges in pounds of environmental waste reported in Section 8 of the TRI Form R for 1997.

A majority of the TRI reporters and the environmental waste are located within four regions of the state in which IDEM now has regional offices. The Northwest Regional Office covers Lake, LaPorte and Porter counties. The total TRI reporters in each county report over 10 million pounds of environmental waste. Lake County has the largest total of environmental waste reported with 92 million pounds. Elkhart County, the county with the most TRI reporters (100), is located in the area of the Northern Regional Office, which serves DeKalb, Elkhart, Fulton, Kosciusko, LaGrange, Marshall, Noble, St. Joseph, Starke and Steuben counties. Posey, and Warrick Counties, which are ranked No. 7 and No. 8 in total environmental waste in the state respectively, fall under the Southwest Regional Office, which serves Crawford, Daviess, Dubois, Gibson, Knox, Martin, Orange, Perry, Pike, Posey, Spencer, Vanderburgh and Warrick counties. The main IDEM office located in Indianapolis covers the rest of the state. Marion County TRI reporters reported approximately 70 million pounds of environmental waste, which is the second largest amount in the state.

Environmental Wastes
All chemicals
TRI section 8.1-8.7
Reported for 1997
Summarized by county
Number in county indicates number of facilities reporting.



Pounds of waste



Map source:
Taylor University,
Jamie Warrick

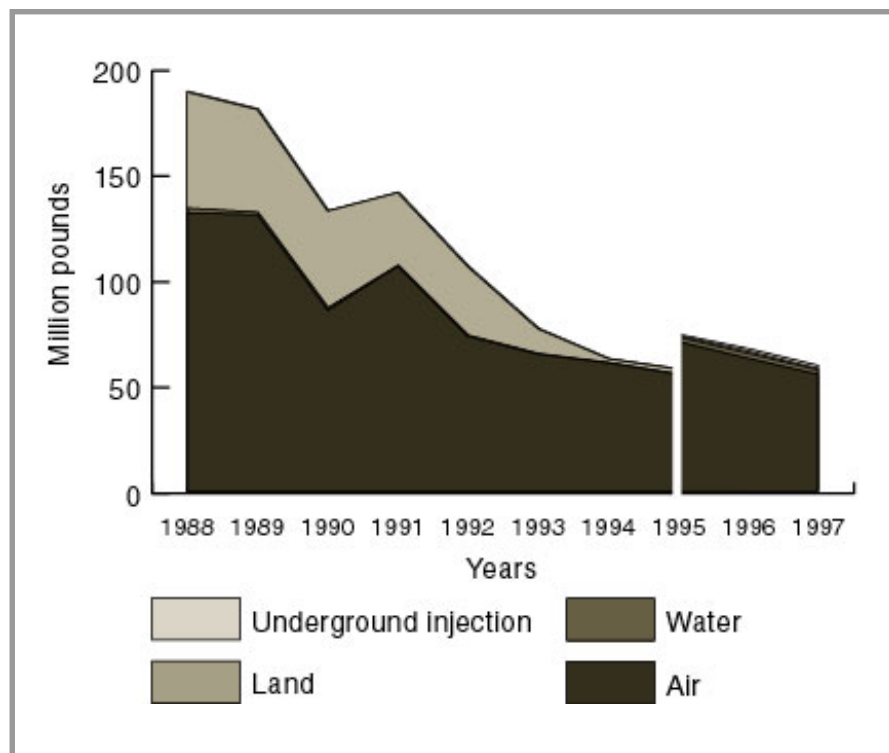
Data source:
IDEM, OPPTA

Data current as
of January 1999

All Reported Toxic Release Inventory Releases 1988-1997 By Release Type

In 1995, the U.S. Environmental Protection Agency added 300 new chemicals to the list of TRI reportable chemicals. Of these, 20 compounds were reported in Indiana. The break in the chart indicates this change in reporting requirements. Because 1995 is the year of change, there are two data points for the year to allow for consistency when trending the data. The data point to the left represents the total environmental release generated using the “old” list of reportable chemicals. And the data point on the right represents the “new” list of chemicals. OPPTA believes that this approach to trending the TRI data allows for an “apples to apples” comparison and leads to a better representation of how TRI release data are trending from year to year.

Indiana manufacturers have decreased their releases from 190 million pounds in 1988 to 59 million pounds in 1997. This represents a 69 percent reduction in the total pounds of toxic chemical releases reported in Indiana using a consistent set of chemicals that were subject to reporting for that time period. When looking at the releases associated with the new reportable chemical list (i.e., 1995 to 1997), Indiana manufacturers have decreased their releases by 20 percent, while reported activity has increased 50 percent.

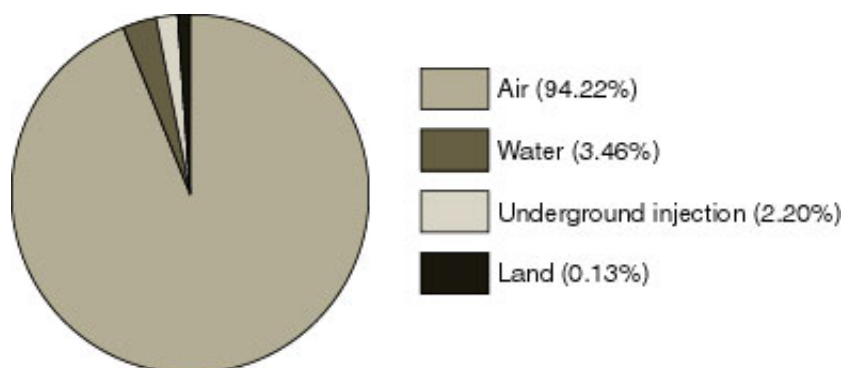


Activity Index

Annual:	92-93:	+8%	95-96:	+10%
	93-94:	-3%	96-97:	+40%
	94-95:	+9%		
Overall:	+76%			

Toxic Chemical Releases by Media Type

The makeup of TRI releases in Indiana have remained consistent throughout the years. Air releases make up over 90 percent of the total releases. The percentage of the total releases that occur to water increased from less than 1 percent of the total in reporting year 1995 to 3.46 percent in 1997. This increase is mainly due to the addition of nitrate compounds as a reportable chemical in reporting year 1995. The percentage of total releases in Indiana to land has continued to decrease to 0.13 percent. Finally, the percentage of



total releases in Indiana via underground injection increased from less than 1 percent to 2.2 percent. This increase was mainly due to a facility in Porter County which in 1996 and 1997 reported over 500,000 pounds of ammonia released by underground injection.

1997 Top 10 Facilities Based on Releases

According to the 1997 reporting year, USS Gary Works in Lake County reported the largest amount of toxic chemical releases. However, from 1995, USS Gary Works decreased their total reported releases from approximately 11.5 to 4.4 million pounds. R.R. Donnelley & Sons Company in Kosciusko County dropped from 3rd in 1995 to 5th in 1997 due to an approximate 1.0 million pound decrease in releases.

In comparing 1995's Top 10 list versus the 1997 Top 10 list, four facilities (i.e., Flexel Indiana Incorporated in Warren County, Whirlpool Corporation in Vanderburgh County, Amoco Oil Company Whiting Refinery in Lake County, Sonoco Flexible Packaging in Johnson County)

Rank	Facility (county)	Pounds
1	USS Gary Works (Lake)	4,753,140
2	General Electric Plastics (Posey)	2,744,692
3	ALCOA, Warrick Operations (Warrick)	2,569,329
4	GMTG Fort Wayne Assembly (Allen)	1,713,583
5	Allegheny Ludlum Corp. (Henry)	1,107,715
6	R.R. Donnelley & Sons Co. (Kosciusko)	1,092,270
7	Cargill Inc. (Tippecanoe)	1,043,276
8	Bethlehem Steel Corp. (Porter)	1,024,495
9	Eli Lilly Clinton Laboratories (Vermillion)	917,930
10	Subaru-Isuzu Automotive (Tippecanoe)	914,427

dropped off of the Top 10 list in 1997. Their replacements include: Allegheny Ludlum Corp. in Henry County, Cargill Inc. in Tippecanoe County, Bethlehem Steel Corp. in Porter County and Eli Lilly Clinton Laboratories in Vermillion County.

1997 Top 10 Toxic Chemical Releasing Industry Sectors

Rank	SIC CODE	Facility	Pounds
1	33	Primary Metal Industries	10,373,712
2	30	Rubber & Misc. Plastic Products	8,866,888
3	37	Transportation Equipment	7,581,999
4	28	Chemicals and Allied Products	5,261,266
5	34	Fabricated Metal Products, except Machinery and Transportation Equipment	4,142,887
6	25	Furniture and Fixtures	2,011,493
7	39	Miscellaneous Manufacturing Industries	1,924,827
8	24	Lumber and Wood Products, Except Furniture	1,721,715
9	36	Electronic and Other Electrical Equipment and Components Except Computer Equipment	1,628,487
10	27	Printing, Publishing, and Allied Products	1,399,130

Since the 1995 reporting year, the makeup of the top 10 toxic chemical releasing industrial sectors has remained the same except for Miscellaneous Manufacturing Industries (Standard Industrial Code 39), which replaced Paper and Allied Products (Standard Industrial Code 26). Consistent with the downward trend of total releases from Indiana facilities, seven of the top 10 sectors reduced their total pounds of releases from 1995 to 1997. Three sectors (Primary Metal Industries - Standard Industrial Code 33, Chemicals and Allied Products - Standard

Industrial Code 28 and Miscellaneous Manufacturing Industries - Standard Industrial Code 39) increased releases during this same time period. The Primary Metal Industries sector experienced an increase in releases of approximately 2.7 million pounds from 1995 to 1997. The Rubber and Miscellaneous Plastic Products sector saw a decrease in releases of approximately 2.5 million pounds. These changes combined placed the Primary Metal Industries sector at the top of the list.

Indiana Facilities Reporting More Than 2 Million Pounds of Releases in at Least One Reporting Year

Facility (county)	1991	1992	1993	1994	1995	1996	1997
3M Company (Blackford)	X	X	X				
ALCOA Warrick Operations (Warrick)	X	X	X	X	X	X	X
Amoco Oil Co. Whiting Ref. (Lake)	X						
Bethlehem Steel Corp. (Porter)	X	X	X	X			
Dalton Foundries Inc. (Kosciusko)	X						
Eli Lilly Clinton Labs (Vermillion)	X	X	X				
Eli Lilly Tippecanoe Labs (Tippecanoe)	X	X	X	X			
Flexel Indiana Inc. (Warren)	X	X	X	X	X		
Ford Electronics and Refrig. Corp. (Fayette)	X						
General Electric Plastics (Posey)	X	X	X	X	X	X	X
Inland Steel Co. (Lake)	X	X	X				
National Steel Corp. (Porter)	X	X	X				
R.R. Donnelly and Sons Co. (Kosciusko)	X	X	X	X	X		
USS Gary Works (Lake)	X	X	X	X	X	X	X

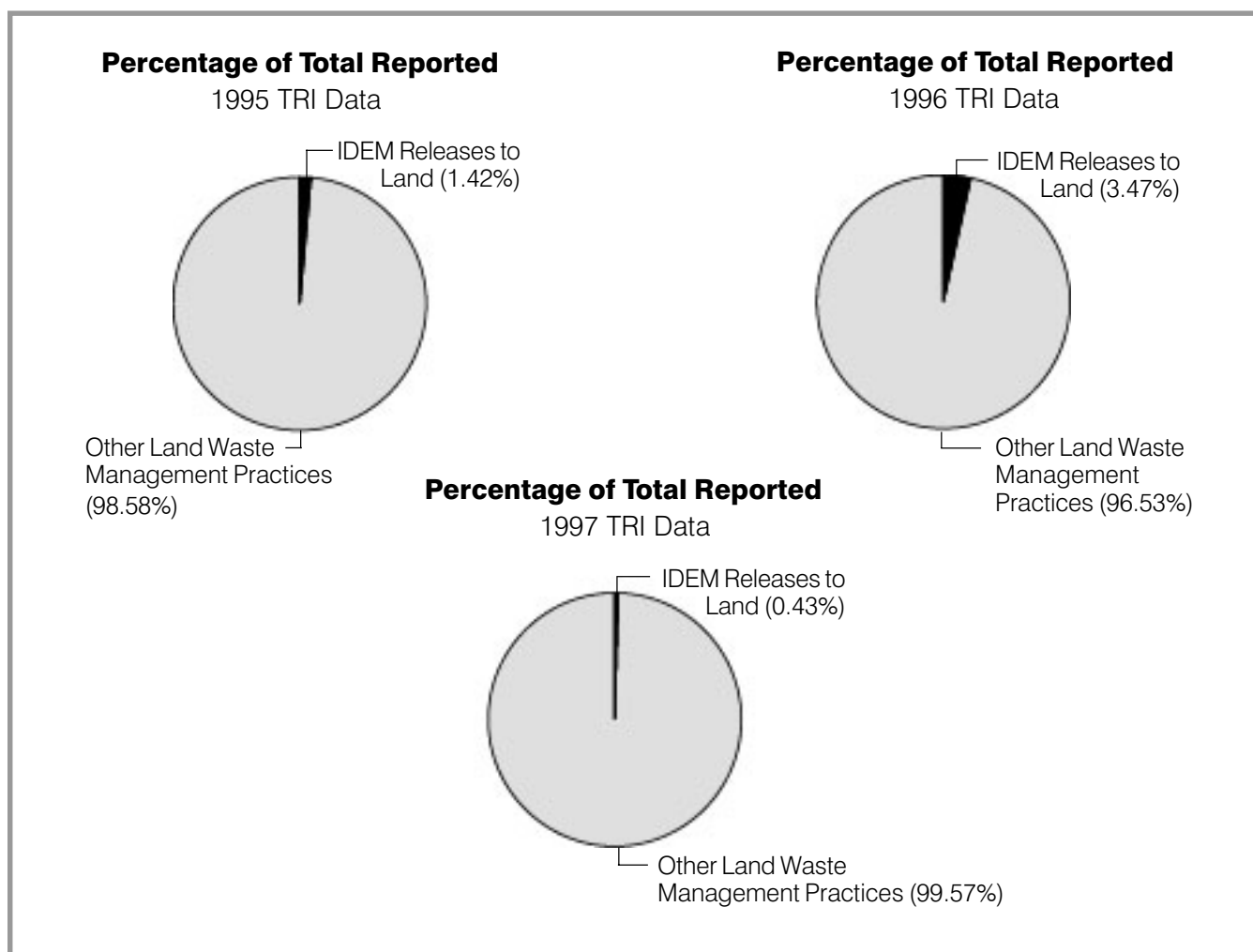
This list of facilities is comprised of TRI reporters that report greater than 2 million pounds of toxic chemicals as releases to the environment in at least one year between 1991 and 1997. This group of reporting facilities was designated the “large releasers” due to a significant gap between the number of Indiana companies reporting over and those reporting under 2 million pounds.

Since the 1991 reporting year, fourteen facilities reported over 2 million pounds of releases in at least one year. Consistent with the overall trend of decreasing releases being reported by Indiana manufacturers, the number of facilities exceeding this threshold from 1992-1997 is going down. In 1997, only three facilities (ALCOA in Warrick County, General Electric Plastics in Posey County and USS Gary Works in Lake County) reported over

2 million pounds of releases of toxic chemicals. The result is an 84 percent reduction in the number of facilities reporting greater than 2 million pounds of releases to the environment from 1991 to 1997.

In 1998, the baseline year for trending the number of facilities reporting more than 2 million pounds of releases was adjusted from 1988 to 1991. This change was made so that both the 20 million pound large environmental waste reporters and the 2 million pound large release reporters would have consistent starting years (i.e., 1991) for trending purposes. As a result of the change, two facilities (Child Craft Incorporated in Washington County and Teledyne Casting Service in LaPorte County) dropped out of the 2 million pounds of releases category.

Comparison of Viewpoints on Land Release Data (1995-1997)



When reporting land release information using the Form R reporting form, the U.S. Environmental Protection Agency identifies five different practices that are considered releases to the land.

The five categories of land releases are transfers to:

- 1) RCRA Subtitle C,
- 2) Other permitted landfills,
- 3) Surface impoundments,
- 4) and spills and releases, or
- 5) Land application of waste.

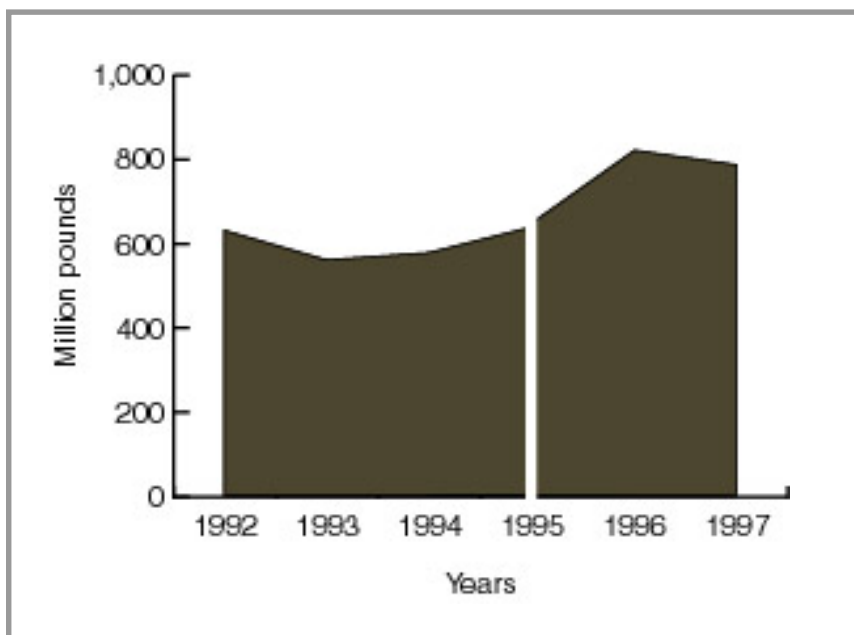
In the 1997 Toxic Release Inventory Annual Report, OPPTA took the position to not consider transfers to RCRA Subtitle C and “other” permitted landfills as “true” releases to land. These facilities are highly regulated, designed not to cause a release, are considered waste management practices, and were therefore not considered a “true” release to land. Thus in the earlier reports, the amounts reported

under these two categories were removed from the OPPTA TRI database. The pie charts represent the percentage of the total reported land release values that were included in our reports.

In order to get a better understanding of what impact this has on Indiana’s release totals, the above pie graphs were created. In 1995, 1.42 percent (97,437 pounds) of the total land releases reported were counted by IDEM as “true” releases to land. For 1996, the percentage rose to 3.47 percent (295,197 pounds). Finally, in 1997, the percentage dropped to 0.43 percent (75,112 pounds). However, the difference in reported land releases has been approximately 6.7 million pounds in 1995, 7.9 million pounds in 1996, and 17.1 million pounds in 1997. In order to eliminate confusion, OPPTA will no longer differentiate between reported land release values.

All Environmental Waste Reporters (1992-1997)

In 1995, the U.S. Environmental Protection Agency added 300 new chemicals to the list of TRI reportable chemicals. Of these, 20 compounds were reported in Indiana. The break in the chart indicates this change in reporting requirements. Since 1995 is the year of change, there are two data points for the year to allow for consistency when trending the data. The data point to the left represents the total environmental waste generated using the “old” list of reportable chemicals. And the data point on the right represents the “new” list of chemicals. OPPTA believes that this approach to trending the TRI data allows for an “apples to apples” comparison and leads to a better representation of how TRI release data are trending from year to year.

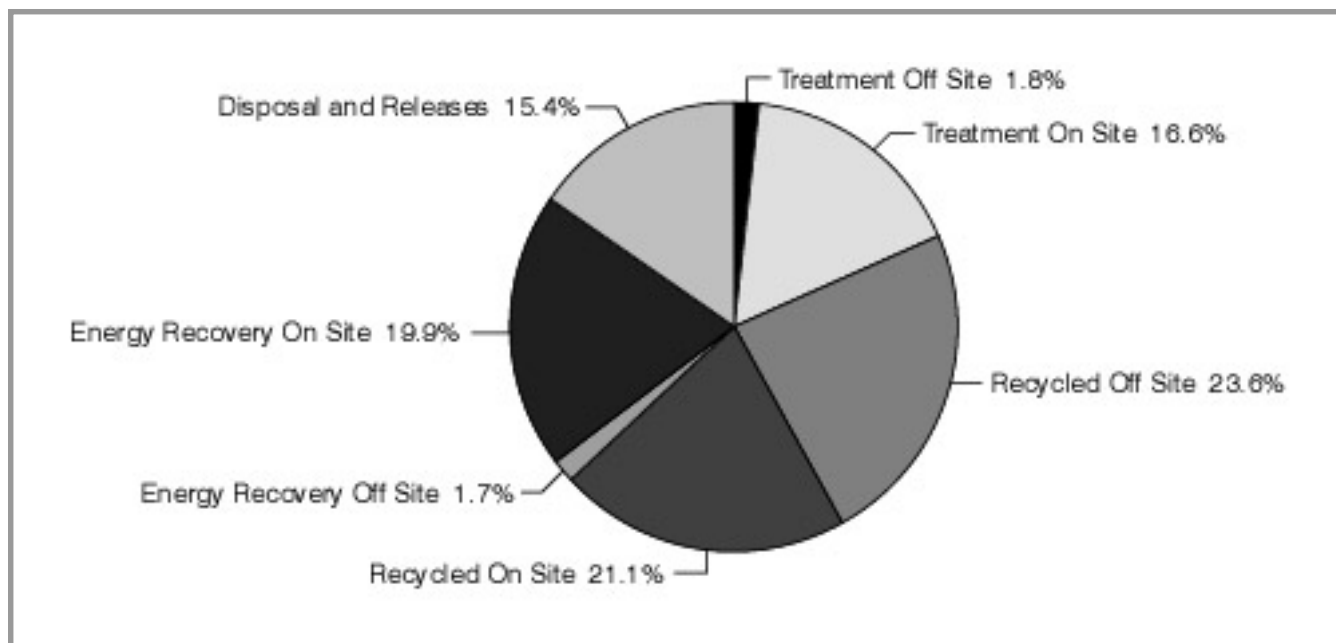


Activity Index

Annual:	92-93:	+5%	95-96:	+3%
	93-94:	+18%	96-97:	+20%
	94-95:	-12%		

Overall: +35%

All 1997 Reporters (By Waste Management Technique)



From 1992 to 1995, Indiana manufacturers reported a 1.2 percent increase in reported environmental waste. However, during this same time period Indiana manufacturers' activity increased 11 percent. The increase in waste reported was 15 percent between 1995 and 1996, and in report year 1997 there was a 3 percent reduction reported. Overall the total amount of environmental waste reported by Indiana manufacturers in 1997 (approximately 790,000,000 pounds) is 2% higher than what was reported in 1995 (approximately 775,000,000 pounds) including the new chemicals. Overall, from 1992 to 1997, Indiana manufacturers made progress in terms of their reported environmental waste and reported activity. Manufacturers' environmental waste generation increased by 27 percent, while manufacturing activity increased by 35 percent during this same time period.

Since 1991, Indiana manufacturers have reported environmental wastes in seven categories: disposal and releases, energy recovery on- and off-site, recycling on- and off-site, and treatment on- and off-site. From 1995 to 1997, Indiana manufacturers had a significant shift from recycling to energy recovery. The percentage of environmental waste reported as recycled (both on- and off-site) decreased from approximately 64 percent in 1995 to 45 percent in 1997. Meanwhile, the percentage of environmental waste reported as energy recovered (both on- and off-site) increased from 8 percent in 1995 to almost 21 percent in 1997. Much of the reported energy recovery values come from reporters with a primary Standard Industrial Code 32.

1997 Top 10 Environmental Waste Reporters

Since the 1995 TRI Annual Report, the top 10 environmental waste generators list has changed significantly. Based on 1997 data, five Indiana facilities (Preferred Technical Group Incorporated in Whitley County, Delphi Automotive Systems in Delaware County, Exide Corporation in Clinton County, Essex Group Inc. - Plant 55 in Whitley County and Mascotech Stamping Technologies Incorporated in Noble County) dropped off of the top 10

environmental waste generators list. Their replacements are Lone Star Industries Incorporated in Putnam County; USS Gary Works in Lake County; General Battery/Exide Corporation in Delaware County; Vitamins, Inc. in LaPorte County and Tippecanoe Laboratories in Tippecanoe County.

Rank	Facility (county)	Pounds
1	ESSROC Cement Corp. (Cass)	61,575,973
2	Reilly Industries Inc. (Marion)	43,466,581
3	Lone Star Industries Inc. (Putnam)	40,629,668
4	USS Gary Works (Lake)	40,414,090
5	General Electric Plastics (Posey)	34,784,353
6	ALCOA, Warrick Operations (Warrick)	34,015,076
7	General Battery/Exide Corp. (Delaware)	31,371,488
8	Eli Lilly Clinton Labs (Vermillion)	26,009,685
9	Vitamins Inc. (LaPorte)	25,310,000
10	Tippecanoe Laboratories (Tippecanoe)	22,215,389

The replacements reported a combined increase in environmental waste of approximately 107 million pounds while the facilities dropping out of the top 10 reported a combined decrease of environmental waste of approximately 84 million pounds.

1997 Top 10 Environmental Waste Reporting Industrial Sectors

Rank	SIC CODE	Industry	Pounds
1	33	Primary Metal	272,283,422
2	28	Chemicals & Allied Products	138,984,602
3	32	Stone, Clay, Glass and Concrete Products	102,921,433
4	34	Fabricated Metal Products	67,886,027
5	37	Transportation Equipment	30,320,464
6	36	Electronic and Components	29,448,889
7	29	Petroleum Refining and Related Industries	19,447,606
8	30	Rubber and Plastic Products	12,783,920
9	35	Industrial and Commercial Machinery	7,097,361
10	25	Furniture and Fixtures	5,887,220

Since the 1995 reporting year, the makeup of the top 10 environmental waste reporting industrial sectors has remained the same except for the Furniture and Fixtures (Standard Industrial Code 25) industry, which replaced Printing, Publishing and Allied Industries (Standard Industrial Code 27). There was a decrease in total environmental waste reported from 1996 to 1997, but an overall increase occurred from 1995 to 1997. Consistent with this overall increase in environmental waste, five of the top 10 sectors increased their total pounds of

environmental waste from 1995 to 1997. The biggest apparent increase in reported environmental waste between 1995 and 1997 came from Standard Industrial Code 32 - Stone, Clay, Glass and Concrete Products, with an increase of approximately 93 million pounds.

ESSROC Cement Corp. in Cass County was not included in the environmental waste quantities used in the 1997 TRI Annual Report. Adding the exclusion back in increased Standard Industrial

Code 32's total environmental waste by over 60 million pounds from 1995 TRI numbers. We added ESSROC's reported values in to this report, which is partially responsible for the increase. We also saw an increase in reported energy recovery values from

other "cement kilns." For example, Lone Star Industries Inc. in Putnam County reported an increase in environmental waste of over 30 million pounds used for energy recovery from 1995 to 1997.

Indiana Facilities Reporting More Than 20 Million Pounds in at Least One Reporting Year

Facility (county)	1991	1992	1993	1994	1995	1996	1997
ALCOA Warrick Operations (Warrick)	X	X	X	X	X	X	X
Delphi Automotive Systems (Delaware)			X	X			
Delta Faucet Company (Decatur)						X	X
Eli Lilly Clinton Labs (Vermillion)	X	X	X		X	X	X
Eli Lilly Tippecanoe Labs (Tippecanoe)	X	X	X				X
Essex Group Inc. - Plant 55 Metals Processing (Whitley)					X	X	
ESSROC Cement Corp. (Cass)					X	X	X
Exide Corporation (Clinton)	X			X	X	X	
Ferro Corp., Kiel Div. (Lake)	X						
General Battery/Exide Corp. (Delaware)							X
General Electric Plastics (Posey)					X	X	X
Inland Steel Co. (Lake)	X	X					
Lone Star Industries Inc. (Putnam)	X	X	X			X	X
Mascotech Stamping Technologies Inc. (Noble)					X	X	
Preferred Technical Group (Lawrence)	X	X	X				
Preferred Technical Group (Whitley)		X	X	X			
Reilly Industries Inc. (Marion)	X	X	X	X	X	X	X
Rhone Poulenc Inc. (Lake)	X	X					
USS Gary Works (Lake)						X	X
Vitamins Inc. (LaPorte)						X	

To be included in the list of large environmental waste reporters a facility must have reported more than 20 million pounds of at least one reportable chemical, in at least one year. Twenty (20) million pounds was chosen as a threshold because of the significant gap between the number of companies reporting over 20 million pounds of environmental waste and those companies reporting under 20 million pounds. The change in the list of facilities between years is often associated with fluctuations in production.

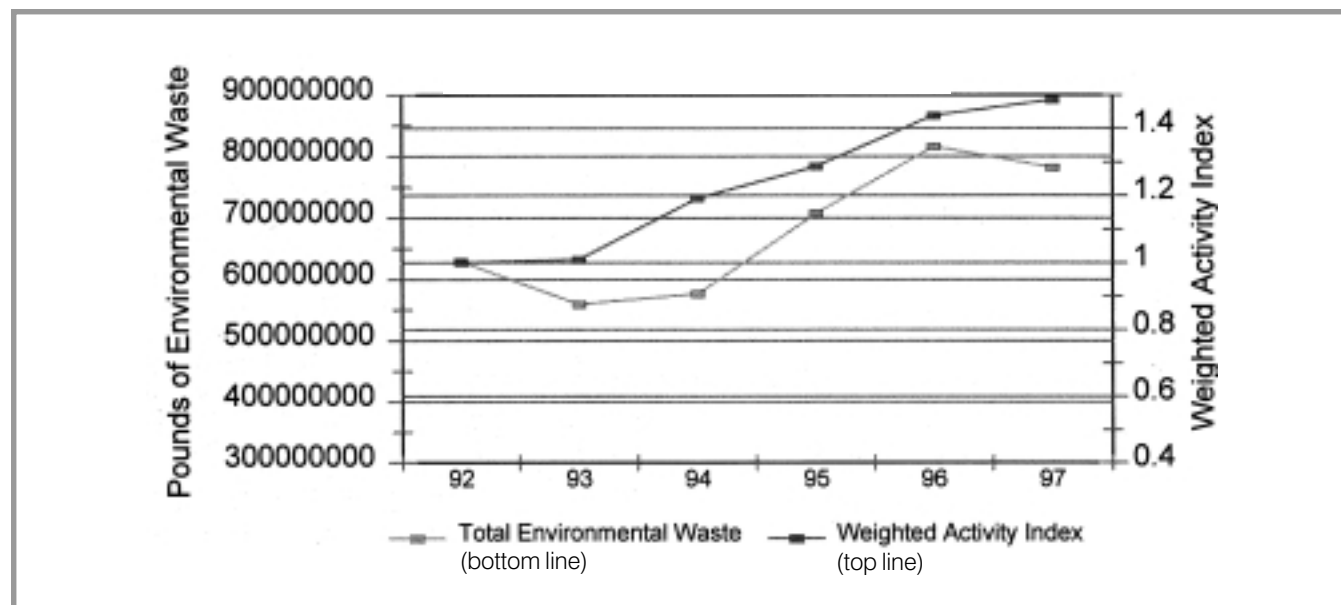
Since the 1991 reporting year, twenty facilities in at least one year have reported 20 million pounds of environmental waste. Of the twenty, three facilities (Ferro Corporation - Kiel Division, Rhone Poulenc

Inc. and Inland Steel Company, all in Lake County) have not exceeded 20 million pounds of environmental waste in at least one year since the 1992 reporting year. Also, five facilities (ESSROC Cement Corp. in Cass County, General Battery/Exide Corp. in Delaware County, USS Gary Works in Lake County, Delta Faucet Company in Decatur County and Vitamins Inc. in LaPorte County) have been added to the list since the 1995 reporting year. ESSROC and USS Gary Works were excluded from the 1997 TRI Annual Report and the list of large generator category because of changes in their respective reporting basis. Vitamins Incorporated recycled on-site over 20 million pounds of N-hexane in 1996 and 1997 to make the list. Delta Faucet Company exceeded the 20 million pound

threshold in 1996 and 1997 after reporting zinc compounds in environmental waste in excess of 7 million pounds each year. Finally, General Battery/Exide Corp. exceeded the threshold because of increased recycling on- and off-site of lead compounds.

The list has been updated to reflect revisions received since the 1997 TRI Annual Report was published. Because of submitted revisions, four facilities (Bethlehem Steel Corp. and National Steel Corp. in Porter County, National Processing Corp. in Lake County and NUCOR Steel in Montgomery County) have dropped off of the 20 million pound list.

Environmental Waste (Compared to Production)



NOTE: Gap is proportional to pollution prevention progress.

This graph demonstrates an approach to measuring pollution prevention progress using Toxic Release Inventory data. The bottom line demonstrates the trend in reported environmental waste values from 1992 to 1997. The large increase between 1994 and 1995 is partially due to the addition of 300 new chemicals to the TRI list of reportable chemicals.

The top line demonstrates the trend in the “weighted activity index” reported by all Indiana facilities. For each chemical report submitted, there is a production ratio that is to be calculated based on the use of that specific chemical at that facility compared to the previous year. The production ratio is used to determine if a facility is more efficiently using a particular chemical from one year to the next. For example, if a company reports a production ratio of 1.0 in 1996 and a production ratio of 1.2 in 1997 for the same chemical used in the same process, this

would indicate a 20 percent increase in production associated with the use of that specific chemical compared to the previous year’s production.

Indiana measures pollution prevention progress for manufacturers using the TRI Program. It compares the annual change in toxic chemicals in environmental waste with the annual change in production. The percent change in production minus the percent change in waste is the net pollution prevention progress. Using this equation, the overall pollution prevention progress demonstrated by the graph between 1995 to 1997 is 15 percent.

The Office of Pollution Prevention and Technical Assistance will continue to refine this process to measure pollution prevention and recognizes its limitations (i.e., only captures TRI reporters, and changes in reporting requirements have an effect on the overall measurement).

Hazard Ranking

All toxic chemicals do not pose equal hazards. A pound of copper dust in the air is much less hazardous than a pound of cyanide compounds. Putting this difference on a similar scale is difficult. The hazard depends on how the chemical is handled, its toxicity and the methods by which people or the environment may be exposed to it.

The Clean Manufacturing Technology and Safe Materials Institute at Purdue University developed a scale of hazard factors that can be used to better understand the relative hazards associated with various chemicals. The hazard ranking factors consider the potential hazards of a chemical and its potential to be released into the environment. Chemicals are assigned a numerical value between 0 and 100. Multiplying the pounds of chemical

released by the hazard factor gives better understanding of the hazards associated with one class of compounds relative to other classes.

Indiana Relative Chemical Hazard Score

The hazard factors change as data available for individual chemicals change. For the latest hazard factor, please access the Indiana Clean Manufacturing Technology and Safe Materials Institute Web page.

www.ecn.purdue.edu/CMTI

Top Ten List of All Chemicals by Releases and Associated Relative Hazpounds

Chemical Name	Releases	Chemical Hazard Score	Rel Hazpounds	Hazard Rank
AMMONIA	6,440,626	21.8	140,405,647	4
TOLUENE	6,181,675	29.1	179,886,743	1
XYLENE (MIXED ISOMERS)	5,832,689	26.1	152,233,183	2
DICHLOROMETHANE	4,786,750	29.0	138,815,750	5
STYRENE	4,369,553	32.7	142,884,383	3
METHYL ETHYL KETONE	2,872,992	27.9	80,156,477	6
METHANOL	2,155,608	24.7	53,243,518	8
GLYCOL ETHERS	2,125,210	20.5	43,566,805	10
TRICHLOROETHYLENE	1,750,809	39.4	68,981,875	7
CARBONYL SULFIDE	1,633,953	30.5	49,835,567	9